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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,071	02/07/2001	Takashi Takeuchi	202937US2S	7369

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ALEXANDRIA, VA 22314

EXAMINER

JAWORSKI, FRANCIS J

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/778,071

Applicant(s)

5

TAKEUCHI ET AL.

Examiner

Jaworski Francis J.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 18 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 and 10 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8, 9, 11 and 15 is/are allowed.
- 6) ☒ Claim(s) 1-3, 12-14 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 3, 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 fails to claim the disclosed invention since the lower layer per claim 2 is an apparent mismatch layer. Alternately stated, it is believed that in claim 3 for 'lower' in line 4 read 'upper'.

Claim 14 recites the limitation "the plurality of first pattern wires" in 2. There is insufficient antecedent basis for this limitation in the claim.

The Examiner believes that dependency from claim 11 which uses this terminology was intended.

Claim Rejections - 35 USC § 102/103

[Claims 4-7 and 10 stand withdrawn from consideration as directed to a non-elected invention pursuant to applicants' election without traverse filed 7/18/03.]

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).]

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al (US5311095) or in the alternative under 35 USC 103(a) as obvious based upon Smith et al in view of Finsterwald et al (US5423220). Smith et al in col. 4 lines 28-65 discuss use of a conductive epoxy resin impedance mismatch backing layer for a cut i.e. slotted piezoelectric crystal transducer array. Such is installed opposite to the acoustically emitting side. The stated impedance of 5Mrayls is low relative to typical piezoelectric values. That is to say, Smith et al may be viewed as anticipatory based upon the stated value and the announcement of other 'low impedance' alternative backings. Alternatively whereas it may be argued that technically Smith et al do not literally state

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that the conductive resin mismatch layer is 'low' impedance, [since a mismatch layer or 'de-match' layer may be of either low or high impedance type – see Miller (US6551248) or ineffective date and not part of this rejection argument for concept.], it would have been obvious in view of Finsterwald et al col. 7 lines 20-23 to select a piezoelectric member of nominal impedance e.g. 29 Mrayls such that the stated impedance value in Smith et al is literally low in relation thereto.

Claims 2, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al alone or further in view of Finsterwald et al as applied to claim 1 above, and further in view of Barthe of record or applicants' acknowledged prior art. The former as noted above taught use of (lead titanate) piezoelectric material for the array cut elements in conjunction with a low impedance conductive resin backing. Since the current claim additionally calls for a 2-2 type composite transducer member, it would have been obvious to utilize same since these were known to be suitable per Barthe col. 3 line 17 or the applicants' specification page 3-4 prior art admissions.

Claims 3 and 16 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 2 above, and further in view of Ries et al (US5605154) who note in col. 8 lines 35 – 57 that the lead zirconate titanate array may be backed with an attenuation (mismatch) conductive epoxy resin layer which may also serve as a forward matching layer, or ten Hoff et al (US5406951) who note col. 7 lines 5-15 that a conductive epoxy resin layer forward of the transducer can conveniently serve as a 6Mrayl matching layer for an ultrasound transducer in addition to its conductor function.

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Allowable Subject Matter

Claims 8 – 9, 11 and 15 are allowed.

Claim 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim 11 and any intervening claims.

Venkataramani et al (US5497540) is cited as of interest for its use of conductive resin backing in a sectioned array per col. 6 lines 26 – 38.

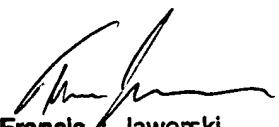
Response to Arguments

Insofar as emphasis in the claims has been altered to provide language for a lower backing mismatch layer opposite the acoustic emitting side the Examiner has applied alternative arguments directed to this feature with additional teaching to use conductive resin for both the front and back transducer electrode functions as well as respective match/mismatch-attenuation functions.

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 571-272-4738.

FJJ:fjj

020406


Francis J. Jaworski
Primary Examiner